UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/021,039	12/19/2001	Masao Kitagawa	60188-132	9505

7590 09/06/2005

Jack Q. Lever, Jr.
McDERMOTT, WILL & EMERY
600 Thirteenth Street, N.W.
Washington, DC 20005-3096

EXAMINER	
TUCKER, WESLEY J	
ART UNIT	PAPER NUMBER
2623	

DATE MAILED: 09/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/021,039	KITAGAWA, MASAO	
	Examiner	Art Unit	
	Wes Tucker	2623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 June 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *12,13 and 15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *12,13 and 15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 December 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *6-13-05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's amendment filed June 13th 2005 has been entered and made of record.

2. Claims 1-11, 14 and 16-18 have been canceled. Claims 12, 13 and 15 have been amended. Claims 12, 13 and 15 remain pending.

3. Applicants remarks and arguments a have been entered and fully considered, but are not persuasive for at least the following reasons:

4. With regard to newly amended independent claim 12, Applicant argues that the passage cited in Hossack about determining the sum of absolute values in an ongoing video sequence "does not suggest, let alone necessitate, that the degree of motion of the image is obtained based on a plurality of sums repectively obtained for a plurality of image pairs." Examiner points to the text of Hossack (column 10, lines 49-55) where successive frames are used to calculate the differences between the previous frame O(n-1) and the current frame I(n). This clearly suggests that a plurality of differences are determined for a plurality of successive frames. This clearly reads on the claimed limitation where "the motion detecting section obtains the degree of motion of the image based on a plurality of sums respectively obtained for a plurality of image pairs." Indeed it is unclear how this degree of motion can be interpreted any other way. The rejection of newly amended claim 12 is therefore maintained.

5. With regard to newly amended independent claim 15, Applicant argues that Hossack "is completely silent as to reducing random noise of the image data based on a difference between pixel data of pixels of the same position ina t least one pair of successive field images or frame images" and also that Hossack "does not disclose or suggest a difference calculating section shared for ... reducing the random noise and for obtaining the degree of motion of the image as recited in claim 15." Examiner points to Hossack (column 10, lines 62-67 and column 11, lines 1-10 and lines 46-55) where it is clearly disclosed that the sum of differences or difference value is used as both a determination of motion as well as an error signal related to noise. Hossack also teaches that the difference value is used to average out noise and improve the signal to noise ratio.

6. It has been sufficiently shown that the combination of references to Cheung et al. and Hossack et al. disclose every aspect of the claimed limitations. The rejection of the claims in there present form is therefore maintained and accordingly made final.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 12, 13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of U.S. Patent 6,178,205 to Cheung et al. and U.S. Patent 6,083,168 to Hossack et al.

With regard to claim 12, Cheung discloses A noise reducing apparatus comprising:

at least one noise reducing section for reducing encoding noise of image data with controllable noise reduction characteristics (column 3, lines 40-45);

a control section for controlling the noise reduction characteristics of the noise reducing section according to at least one of a scale factor for scaling an image represented by the image data and a degree of motion of the image (column 3, lines 45-50).

Cheung does not disclose removing noise according to scale but he does disclose a noise removal device that takes into account motion vectors (column 3, lines 40-50). The control section is considered to be part of the processor that performs filtering according to the motion detected.

Cheung discloses the noise reducing apparatus further comprising a motion detecting section for obtaining the degree of motion of the image based on values of differences between pixel data of pixels of the same position in at least one pair of successive field images or frame images, the difference being obtained for pixels in at least a part of each field image or each frame image, wherein the control section

controls the noise reduction characteristics of the noise reducing section according to output of the motion detecting section (column 7, lines 7-31). Cheung discloses determining the difference between pixels values in two different images or pixel sets and based on those differences motion vectors are determined giving a degree of motion and a corresponding filtering function.

Cheung does not disclose wherein the motion is determined by a sum of absolute differences. Hossack teaches that an advantage of using a minimum sum of absolute differences to determine a measure of image motion gives an error signal related to noise in the image (column 10, lines 56-64). Therefore it would have been obvious to one of ordinary skill in the art to use a sum of the absolute difference between images in order to determine a degree of motion and to obtain an error signal related to noise in the image.

Hossack further discloses wherein the motion detecting section obtains the degree of motion of the obtained for image based on a plurality of sums respectively of image pairs a plurality of sums respectively (column 10, lines 49-55). Hossack discloses where successive frames are used to calculate the differences between the previous frame O(n-1) and the current frame I(n). This clearly suggests that a plurality of differences are determined for a plurality of successive frames. This clearly reads on the claimed limitation where "the motion detecting section obtains the degree of motion of the image based on a plurality of sums respectively obtained for a plurality of image pairs."

With regard to claim 13, Cheung and Hossack disclose the noise reducing apparatus according to claim 12. Hossack further discloses wherein the motion detecting section obtains the degree of motion of the image based on a comparison result of each of the sums with at least one prescribed threshold value (column 10, lines 62-67 and column 11, lines 1-20). Hossack discloses determining a degree of motion from a sum of absolute differences compared with a threshold. Since it is an ongoing process in video the comparison is made with each of the sums.

With regard to claim 15, Cheung discloses A noise reducing apparatus comprising:

at least one noise reducing section for reducing encoding noise of image data with controllable noise reduction characteristics (column 3, lines 40-45);

a control section for controlling the noise reduction characteristics of the noise reducing section according to at least one of a scale factor for scaling an image represented by the image data and a degree of motion of the image (column 3, lines 45-50).

Cheung does not disclose removing noise according to scale but he does disclose a noise removal device that takes into account motion vectors (column 3, lines 40-50). The control section is considered to be part of the processor that performs filtering according to the motion detected.

Cheung discloses the noise reducing apparatus further comprising a motion detecting section for obtaining the degree of motion of the image based on values of

differences between pixel data of pixels of the same position in at least one pair of successive field images or frame images, the difference being obtained for pixels in at least a part of each field image or each frame image, wherein the control section controls the noise reduction characteristics of the noise reducing section according to output of the motion detecting section (column 7, lines 7-31). Cheung discloses determining the difference between pixels values in two different images or pixel sets and based on those differences motion vectors are determined giving a degree of motion and a corresponding filtering function.

Cheung does not explicitly disclose a random noise reducing section based on the difference between pixels in the images. Hossack discloses a random noise reducing section for reducing random noise of the image data, based on a difference between pixel data of pixels of the same position in at least one pair of successive field images or frame images (column 11, lines 46-55). Hossack teaches that the calculation of the difference value can be used in order to determine how to reduce noise and improve the signal to noise ratio of the image thereby creating a better quality image for viewing. Therefore it would have been obvious to one of ordinary skill in the art at the tie of invention to use reduce noise using the difference value taught by Hossack in order to enhance the quality of the image.

Cheung does not disclose that the difference calculating section be shared for calculating noise and for calculating motion. Hossack discloses a difference calculating section shared for calculating the difference between pixel data for reducing the random noise by the random noise reducing section and for calculating the difference between

pixel data for obtaining the degree of motion of the image by the motion detecting section (column 10, lines 62-67 and column 11, lines 1-10 and lines 46-55). Here it is clearly shown that the sum of differences or difference value is used as both a determination of motion as well as an error signal related to noise. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to use the difference value calculated by Hossack as representing both a noise value and a degree of motion in order to share a difference calculating section.

Conclusion

It has been clearly and thoroughly shown that the combination of references to Cheung et al. and Hossack et al. conform to the claimed limitations in the present application.

Applicant's amendment necessitated the new grounds of rejection presented in the Office Action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wes Tucker whose telephone number is 571-272-7427. The examiner can normally be reached on 9AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on 571-272-7429. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Wes Tucker
8-26-05

VIKKRAM BALI
PRIMARY EXAMINER